

REMARKS

Applicants wish to thank the Examiner for considering the present application. In the Office Action dated August 28, 2003, claims 1-21 are pending in the application. Applicants respectfully request the Examiner for reconsideration.

The drawings stand objected to under 37 C.F.R. §1.83(a) because the drawings must show every feature of the invention specified in the claims. The Examiner rejects claims 1 and 5 for not showing an emulated spacecraft control processor. The emulated spacecraft control processor is shown at element 40 which is abbreviated ESCP in Fig. 1. The first simulation engine and second simulation engine 12, 13 are illustrated as compute engines. These are also described in the specification as simulation engines.

With respect to claim 2, the Examiner states that no host computer is illustrated. However, host computer 14 is illustrated in Fig. 1.

With respect to claims 3 and 4, the Examiner states that no attitude control subsystem illustrated. However, no attitude control subsystem is claimed. The terminology is attitude control subsystem data. Attitude control subsystem data is provided by the ESCP 40 as described in the specification.

With respect to claim 10, the wording for claim 7 has been amended to clarify that the GPS generator claimed in claim 7 is the GPS server.

With respect to claim 8, the central time source is described in the specification in the seventh paragraph of the summary of the invention. This paragraph states "The system includes a Stratum One Server or Time Code Translator to provide a Universal Time reference. The time reference is the central time source for the simulation engines to adjust and skew simulation frames, embedded clocks and time-stamping mechanisms." Thus, the Time Code Translator 52 is the central time source as described in the specification. Also, the Examiner states that the first simulation engine and the central time count is not shown in either figure.

The first simulation engine is compute engine 12 as described above with respect to claim 1. No "count" is illustrated in either figure. Applicants respectfully submit that no count is required to be shown since a count is not illustratable.

The Examiner's question "which time parameter for which clock" is described in claims 9 and 10. Claim 8 has been amended to remove the reference to the time clock period and changed to the time clock. Thus, the time frame refers to the real time clock.

With respect to claim 12, the Examiner states that no second simulation is shown in Fig. 1. However, the specification refers to compute engine as a second simulation engine.

With respect to claims 16, 18, 20, and 21, Fig. 2 illustrates various steps. Although explicitly not labeled, the specification clearly details the arrows from the various circles. These represent the process steps.

On page 10, line 9, the Examiner states that reference numeral 13 is missing from Fig. 2. Figure 2 has been amended to include reference numeral 13. The Examiner states that a GPS server and a master counter are not shown in Fig. 2. However, the GPS server 50 is illustrated in the lower left hand side of the drawing. Also, a master counter is illustrated on the arrow between the ESCP real time clock and the compute engine simulation.

On page 8, line 10, the Examiner refers to the ESCP 40 as an integral part of the AD RTS. The Examiner is correct that the AD RTS tower illustrated in the figure is the same as reference numeral 11. Reference numeral 11 is meant to expand what is in the actual tower illustrated.

On page 8, line 22, the Examiner states that a local calendar time is described. The Examiner further states that Fig. 2 does not display nor describe a satellite local calendar time. The specification states "The local clock 42 is derived from the real time clock and is the satellite local calendar time that is telemetered to the ground status and control system." Thus, the real time clock is illustrated. Likewise, the local time clock is also illustrated. Thus, applicants respectfully submit that these elements are illustrated.

Claim 15 stands rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. Applicants have amended claim 15 for clarification.

The Examiner also points to claim 20 as reciting the step of slaving the master counter and the compute engine. Applicants have amended the wording of claim 20 to refer to the real time clock rather than the master count counter to be consistent with the specification.

Claims 1-21 stand rejected under 35 U.S.C. §102(b) as anticipated by *Zammit*. Applicants respectfully traverse. For a proper §102(b) rejection, each and every one of the elements must be provided in the reference. It should be noted that the present application is an improvement upon the *Zammit* reference. The *Zammit* reference is described as a Hughes invention. Boeing has purchased the satellite business of Hughes to which the present invention is assigned. As described in the second to last paragraph of the detailed description, "The present invention improves the capability of the simulation system by correcting the timing of the system to mitigate drift and bias to an exceptional degree of accuracy. The time domain of the simulation engine is therefore tuned to a very high degree of fidelity and time critical testing is made possible while nominal testing of time critical control system is improved. This system is therefore more attractive as a deliverable to existing and potential customers who wish to have an on-site simulator." Such advantages are obtained by providing a central time source and an emulated spacecraft control processor that contains a real time clock having a real time clock period. The first simulation processes the attitude control system data from the emulated spacecraft control processor to simulate an attitude control system of the spacecraft in real time. The first simulation engine is operative to produce sensor data for input to the emulated spacecraft control processor based on the simulated dynamics and adjust the real time clock in response to time reference. By adjusting the real time clock in response to the time reference, the problem of drift is alleviated. This allows for more accurate simulations. The *Zammit* reference does not adjust the real clock period of the emulated spacecraft control

processor. Each of the claims is similar in that they deal with clock modification. Applicants respectfully request the Examiner to reconsider the independent claims as well as the dependent claims for the reasons set forth above.

In light of the above amendments and remarks, applicants submit that all objections and rejections are now overcome. Applicants have added no new material to the application by these amendments. The application is now in condition for allowance and expeditious notice thereof is earnestly solicited. Should the Examiner have any questions or comments which would place the application in better condition for allowance, he is respectfully requested to call the undersigned attorney. Please charge any fees required in the filing of this amendment to Deposit Account No. 50-0476.

Respectfully submitted,



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